

REMARKS

The Examiner is thanked for the due consideration given the application.

Claims 1, 3-7 and 10-30 are pending in the application. Claim 2 has been canceled and its subject matter has been incorporated into claim 1, and the amendments to claim 1 find additional support in the specification at page 20, lines 13-25. Claims 8 and 9 have been canceled and their subject matter has been incorporated into claim 7, and the amendments to claim 7 find additional support in the specification at page 20, lines 13-25. The amendments to claim 11 find support in the specification at page 30, lines 20-23. The amendments to claim 15 find additional support in the specification at page 20, lines 13-25. Claims 28-30 are new and find support in the specification at page 18, lines 4-8. The claims have also been amended to improve the language and to not depend on canceled claims.

No new matter is believed to be added to the application by this amendment.

Rejections Based On KNAPP et al.

Claims 1-3, 5-9, 21, 23 and 24 have been rejected under 35 USC §102(e) as being anticipated by KNAPP et al. (U.S. Patent 6,235,471). Claims 22 and 25-27 have been rejected under 35 USC §103(a) as being unpatentable over KNAPP et al. Claims 15-19 have been rejected under 35 USC §103(a) as being unpatentable

over KNAPP et al. in view of SUNDBERG et al. (U.S. Patent 6,086,825).

These rejections are respectfully traversed.

The present invention pertains to a particle manipulation unit that is illustrated, by way of example, in Figure 1 of the application, which is reproduced below.

FIG. 1

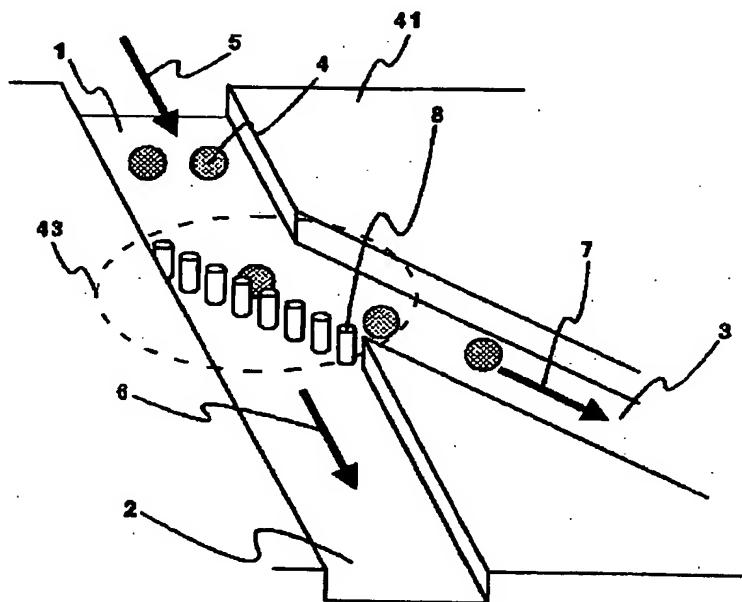


Figure 1 shows a channel 1 with a branching point 43 (permeation limiting zone) containing obstacles 8 spaced by regular gaps. Claim 1 of the present invention recites: "said permeation limiting zone has a plurality of obstacles arranged to be spaced from each other, the obstacles being selected from the group consisting of cylinders, pseudo-cylinders, cones, circular cones, elliptical cones, prisms, triangular prisms and quadrangular prisms," or "said permeation limiting zone has a

plate-formed partition wall having a plurality of openings formed from circles, ovals, polygonal holes or slits."

KNAPP et al. pertain to closed-loop biochemical analyzers. The Official Action refers to column 42, lines 12-35 of KNAPP et al. Column 42, lines 32-35 of KNAPP et al. generally describes: "Such junctions may include ports or channels, which can be clear, i.e., unobstructed, or can optionally include valves, filters, and the like, provided that fluid freely passes through the junction when desired."

However, the "filters" taught by KNAPP et al. fail to disclose the asymmetric i.e., anisotropic, obstacles set forth in independent claims 1, 7 and 15 of the present invention. There is additionally no teaching or suggestion of the angular range of no clogging of the obstacles set forth in new claims 28-30 of the present invention.

In contrast, one of ordinary skill would be motivated by the teachings of KNAPP et al. to turn to a conventional filter having an isotropic pore structure of a type that works by clogging and sedimentation. This type of filter would be unsuitable for the protein separation of the present invention.

KNAPP et al. thus fail to anticipate or render *prima facie* unpatentable claims 1, 7 and 15 of the present invention. The teachings of SUNDBERG et al. fail to address the above-described deficiencies of KNAPP et al. Claims depending upon claim 1, 7 or 15 are patentable for at least the above reasons.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

Rejections Based On O'CONNOR et al.

Claims 1-3, 5-9 and 20 have been rejected under 35 USC §102(e) as being anticipated by O'CONNOR et al. (U.S. Patent 6,729,352). Claims 4 and 10 have been rejected under 35 USC §103(a) as being unpatentable over O'CONNOR et al.

These rejections are respectfully traversed.

O'CONNOR et al. pertain to microfluidic synthesis devices. In regards to filtration, the Official Action refers to column 16, lines 30-44 of O'CONNOR et al., which discusses filling materials composed of a powder such as charcoal or porous beads, or a solid catalyst in the form of beads or a mesh. Column 16 of O'CONNOR et al. also discusses polymeric filling materials.

However, all of these filling materials of O'CONNOR et al. are clearly isotropic and cannot be compared to asymmetric, i.e., anisotropic, obstacles set forth in independent claims 1 and 7 of the present invention.

O'CONNOR et al. thus fail to anticipate or render *prima facie* unpatentable claims 1 and 7 of the present invention. Claims depending upon claim 1 or 7 are patentable for at least the above reasons.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

Rejections Based On AGRAWAL et al.

Claims 11-13 have been rejected under 35 USC §102(e) as being anticipated by AGRAWAL et al. (U.S. Patent 7,195,872). Claim 14 has been rejected under 35 USC §103(a) as being unpatentable over AGRAWAL et al.

These rejections are respectfully traversed.

Independent claim 11 of the present invention sets forth a particle manipulation unit that includes trench structures. Independent claim 11 of the present invention recites: "said trench structures have a long axis and a short axis oriented neither in parallel nor in normal to a force causing the flow of particles."

AGRAWAL et al. pertain to high surface area substrates for microarrays. The surface area is enhanced by using microfeatures. Column 4, lines 56-61 of AGRAWAL et al. states:

A plurality of microfeatures may comprise a pit, a trench, a pillar, a cone, a wall, a micro-rod, a tube, a channel or a combination thereof. The plurality of microfeatures may comprise communicating microfeatures. The plurality of microfeatures may be distributed uniformly on the surface of the substrate. Alternatively, the plurality of microfeatures may be distributed randomly on the surface of the substrate.

Also, the paragraph bridging columns 4 and 5 of AGRAWAL et al. discusses aspect ratios of the microfeatures.

However, these microfeatures of AGRAWAL et al. are to increase surface area. There is no teaching or suggestion in AGRAWAL et al. of using microfeatures for separation such that

"said trench structures have a long axis and a short axis oriented neither in parallel nor in normal to a force causing the flow of particles," as is set forth in independent claim 11 of the present invention.

Independent claim 11 of the present invention is thus neither anticipated by nor *prima facie* unpatentable over AGRAWAL et al. Claims depending upon claim 11 are patentable for at least the above reasons.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

The Examiner is thanked for considering the Information Disclosure Statement filed June 2, 2005 and for making an initialed PTO-1449 Form of record in the application.

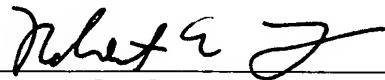
Prior art of record but not utilized is believed to be non-pertinent to the instant claims.

The rejections are believed to have been overcome, obviated or rendered moot and that no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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